

Aquilegia

Newsletter of the Colorado Native Plant Society

Dedicated to furthering the knowledge, appreciation and conservation of native plants and habitats of Colorado through education, stewardship and advocacy



Volume 36 – Number 3 – Fall 2012

ISSN 2162-0865 (print) - ISSN 2161-7317 (online)

2012 CoNPS PHOTO CONTEST

The winner of the 2012 CoNPS photo contest is Bernadi Liem, who took the photo of Queen's Crown (*Rhodiola rhodantha*) below. The photo was taken at Lions Lakes in Rocky Mountain National Park.



IMPORTANT STUFF INSIDE !

**BALLOT
FOR ELECTION OF
BOARD OF DIRECTORS, 2013 – 2015 TERM
(Please vote by February 28!)**

CoNPS LEADERSHIP OPPORTUNITIES

CoNPS President
(See President's Letter)

CoNPS Secretary

and

A thought-provoking piece by Jack L. Carter
on the present state and future of botany.
(next page)

BOTANY: THE DEATH OF A SCIENCE IN AMERICAN EDUCATION

By Jack L. Carter

Over the past century there has been a steep decline in the knowledge the average citizen has of the green plant. This is at a time when botanical understanding is critical to addressing problems pertaining to climate change, preservation of ecosystems, conservation of threatened species, control of invasive species and increasing food production.

In 1900, 85% of the U. S. population lived in a rural setting and 80% of the total population relied on local agriculture for their food supply. Two-thirds of the U. S. population raised 50% of the food they consumed, or it was raised within a 50-mile radius of their home. Today less than 3% of the nation's population is involved in agriculture, and we import more than a third of our food from foreign countries.

Prior to World War II botany was a required course for graduation, along with zoology, in practically every high school in the country. In 1939 botany was required for graduation in the schools of California. Beyond the teaching of botany, one to three years of agriculture was offered in Kansas and Oklahoma schools. The year I graduated from the eighth grade, 1943, Kansas required students to complete a one-semester course in agriculture. The curriculum required that we identify and examine a number of local weeds, learn to recognize trees of eastern Kansas, study the parts of a seed, and learn planting dates for garden species.

Today fewer than 2% of college graduates complete a course in the plant sciences. In fact, in a recent national survey of universities, the faculty reported that 20% of the universities had eliminated the basic botany course in the past 5-10 years.

In the same study, including 1,500 respondents of which 400 were university faculty, a reduction of botanical degrees was reported. In 1988, 72% of the nation's top 50 most-funded universities offered advanced degree programs in botany. Today, more than half of these universities have eliminated their botany programs, and many, if not all, related courses. Statistics from the U. S. Department of Education reveal that

undergraduate degrees earned in botany are down 50% and advanced degrees earned in botany are down 41%.

In another part of the study that examined the preparation for the employment of students for federal, private and non-profit agencies, neither students nor faculty were aware of the coursework requirements for employment as a federal botanist-- 24 credit hours in botany. The study revealed that due to reductions in plant science course offerings, it is likely that many students considering careers as federal botanists will graduate without meeting coursework requirements. In all sectors of the study, the four most serious shortcomings of students, in rank order, included poor communication skills, poor plant identification skills, limited basic botany and ecology knowledge, and limited field experience.

In 2010 Steve Popovich, Forest Botanist and Rare Plant and Noxious Weeds Program Manager, Arapaho & Roosevelt National Forests and Pawnee National Grassland, was in Silver City, NM, to present a paper in a regional seminar. During and following his lecture questions came up concerning his duties as a Forest Service Botanist. Following the meeting Steve was kind enough to prepare a list of his professional activities and assignments and to send me a copy that I am summarizing in this paper. Not only did Steve's job description become an excellent list of activities that could be distributed to undergraduate biology students seeking careers in botany, it provided a powerful outline of the knowledge, skills and values of the plant sciences necessary for a person assigned the task of managing and protecting the nation's public lands. The following job description is limited to key assignments, but they spell out why this nation needs increased numbers of well-trained botanists in the fields of plant taxonomy and plant ecology.

His assignments include:

performing threatened, endangered, and rare plant species surveys, and assessing the potential

impacts of proposed project activities on plant resources;

writing botany portions of NEPA (National Environmental Policy Act) documents, including specialist reports disclosing full impacts on all plant resources;

conducting pro-active botanical surveys to help figure out what is rare and not rare on the Forest, and then designing conservation criteria and monitoring plans to ensure the long-term protection of species of viability concern;

providing public education for botany resources and developing and implementing native plant materials programs;

being knowledgeable of non-vascular plants including cryptograms, lichens and fungi as they are included in management strategies for populations of threatened, endangered, and rare species;

serving as noxious weed and invasive plant species specialist for the agency, collaborating with other state and federal agencies in combating noxious weeds and continuously working with the public to share information;

maintaining a working herbarium to officially voucher plants for the agency and make these collections available to the public; and

acting as a liaison between the agency and organizations such as the Colorado Native Plant Society and the Natural Heritage Program.

This partial list of activities describes the very best reasons why this nation needs literally hundreds of people with the training of Steve Popovich who are prepared to work diligently to conserve and wisely manage our public and private lands. How could our colleges and universities remove the education and training for this career from their curriculum, and at the same time attempt to justify their role in conservation? At the same time, as the need for people with this training has expanded, the numbers graduating has been discontinued.

In the move to study molecular biology we have replaced and neglected the study of the entire plant. Plant studies in systematics, geography, pollination, ecology and the study of the distribution and role of fungi, lichens, algae, bryophytes, ferns, gymnosperms and angiosperms have been dropped from the curriculum in most colleges and universities. It would be interesting to know how many graduate students at the Masters or Ph.D. level are being trained in these fields.

The nation's herbaria, our best hope for maintaining historical records of plant distribution and movements over the planet, are being closed and the scientists are being terminated or told to move into molecular biology, where funding from NSF and NIH is much better. This is at a time when ecologists, soil scientists, climatologists, entomologists, mammalogists and other specialists are utilizing herbaria as they attempt to locate information concerning the history of the distribution of plant species, their earlier ranges, and possible shifts in ranges, flowering dates, and ecological variations resulting from the impact of changes in our environment. University administrators are so tied to federal dollars that they have forgotten that protecting the flora and fauna of Colorado is a university responsibility and requires sound organismic science. The tail is wagging the dog in the plant sciences, while our system of higher education is dropping out of the study of plant conservation and long-term studies of the environment. Perhaps "dollar wise and pound foolish" best describes the leadership in colleges and universities today.

This idea of discarding large areas of knowledge and skills is not new in the history of American universities. In 1960, the year I completed my Ph.D., the University of Iowa was on the path to eliminating a small, but distinguished botany department, and by 1980 that destruction was complete. This was in favor of developing a much larger department of biology centered on the cell and molecular biology. With the expansion of DNA research, not only were studies in higher plants and cryptogams dropped, but studies in ornithology, mammalogy and invertebrate zoology went by the wayside, especially where field studies were concerned. This is not difficult to understand as retirements take place and new faculty are added to new

subsets of biology. Each voting member of a faculty simply votes to expand his or her clone of the science. At the same time, if that is where the huge government dollars reside, the university administration is thrilled to death. And so it goes. For a more complete discussion of this historical transition please read David Ehrenfeld's *Beginning Again: People & Nature in the New Millennium* (1993).

It is impossible to locate funds and time for education and research in the plant sciences in the curriculum of most universities. These types of inadequacies have developed and continue to increase at a time when forests and prairies are being scraped and the earth is rapidly being covered by asphalt and cement. How can we ever become a nation committed to conservation, while the flora that provides the oxygen we breathe continues to be destroyed, and where the ever-increasing human population can not identify even a small part of the flora that surrounds them in their daily lives? Doesn't science education have a key role to play in addressing these issues?

References and Suggested Readings

In an attempt to address the question, "How prepared is the U.S. to meet future botanical challenges?" the Chicago Botanical Garden and Botanic Gardens Conservation International's U.S. office, in collaboration with

the Botanical Society of America produced a 93 page report titled: *Assessing Botanical Capacity to Address Grand Challenges in the United States.*" Based on 1,500 respondents, including faculty and graduate students, to this extensive survey, the study identifies serious gaps and makes recommendations in higher education and research that demands our attention. This report was the source of much of the information included in this paper.

Other related articles included:

Beginning Again: People & Nature in the New Millennium
by David Ehrenfeld, 1993

"Are We Losing the Science of Taxonomy" by Lisa W. Drew, published in *Bioscience*, Vol. 61. No. 12 (December 2011).

"A New Use for 200-year-old Pressed Plants" by Francie Diep, published in *Scienceline*, Posted December 23, 2010.

Jack L. Carter
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REQUEST FOR PROPOSALS

The John W. Marr and Myrna P. Steinkamp Funds

The Colorado Native Plant Society supports research projects in plant biology from the John W. Marr and Myrna P. Steinkamp funds. These separate funds honor the late Dr. John Marr, Professor at the University of Colorado and the first President of the CONPS, and Myrna Steinkamp, a founding member of CONPS who worked on behalf of the Society for many years in a variety of capacities. Both funds were established to support research on the biology and natural history of Colorado native plants by means of small grants. The Steinkamp Fund targets rare species and those of conservation concern. Both field and laboratory studies are eligible for funding. Thanks to the generous contributions of many members and supporters, a total of

nearly \$3,000 is available, although individual awards will not exceed \$1,000. Recipients of the awards must agree to summarize their studies for publication in *Aquilegia*.

The Board of Directors is now soliciting proposals for a February 15, 2013 deadline. Information on guidelines and requirements for proposals may be obtained on our web site at www.conps.org/research_grants.html.

If additional information is needed, contact Board Member Jan Loeschell Turner at jltturner@regis.edu, or by phone at 1-800-388-2366 x 4262, or 303-458-4262.

2012 – 2013 WORKSHOPS

Colorado Native Plant Society



Colorado Native Plant Society Workshops are enjoyable learning experiences that include a lecture and hands-on interaction with plant material. Some workshops may also include a short field trip. Our presenters are industry professionals who have direct knowledge of their subjects and a desire to share it with others. Workshops usually begin at 9 a.m. and end sometime between 2 and 3 p.m. and are held in various locations, usually along the Front Range of Colorado. We suggest that participants bring a lunch and any other materials as noted for each workshop.

In addition, individual chapters offer workshops and field trips.

Payment is required at the time of registration. You can directly register for each CoNPS Workshop online using your PayPal account or any major credit cards. If you would prefer to pay with a personal check made payable to "CoNPS", please download the workshop registration form, fill it out and mail it, along with your check, to CoNPS, c/o Linda Smith, 4057 Cottonwood Drive, Loveland CO 80538.

The fee for attending a workshop is \$25 per session for members. Non-members must join CoNPS to register for a workshop. We hope you will join us and enjoy these workshops with us. The registration fee is non-refundable.

Participation is often limited and registrations are processed in the order received. If the workshop has already been filled, you will be notified, your check will not be deposited, and you will be added to the waiting list if that is what you desire.

If you choose to mail in your registration form, please contact Linda Smith (970-663-4085) to make sure there is room available. If you choose to register online, you don't need to do so.

Contact Linda Hellow, CONPS Workshop Coordinator, for updated schedules, meeting times and places, and fees at conpsworkshops@gmail.com .

The 2012-2013 workshops are being organized by the CoNPS Workshop Committee: Linda Hellow of Centennial, Workshop Coordinator; Colleen Cunningham of Golden; Jeff Jones of Woodland Park; Steve Olson of Pueblo West; and Denise Wilson of Golden. If you have suggestions for future workshops, please contact Linda Hellow at conpsworkshops@gmail.com . Please check the website periodically for updates and additional workshops.

SAGEBRUSH OF THE GORE RANGE

This workshop will be rescheduled in 2013 due to the sagebrush being too drought-stressed to welcome our poking about. Stay tuned!

AQUATIC PLANTS

One-Day Workshop: Choose Saturday, February 23

(Full) or Sunday, February 24, 2013, 9am to 3pm

Location: Jefferson County Extension Office, Golden, CO

Presenter: Denise Culver

Cost: \$25

Dive into the murky depths of Colorado's aquatic plants. We will explore the major aquatic families, such as pondweeds, water milfoils, hornworts, duckweeds, buttercups, burreeds, bladderpods, etc. We will look at major identifying characters, ecology, and discuss how to collect aquatic plants.

Denise Culver has been a botanist/ecologist for more than 20 years and is an ecologist for the Colorado Natural Heritage Program. She has recently published the Field Guide to Colorado's Wetland Plants: Identification and Ecology. She is also a past president of the Northern Chapter of CoNPS.

DEMYSTIFYING GRASSES

One-Day Workshop: Saturday, February 2 (FULL) Sunday, February 3, 2013, 9am to 3pm (FULL)

Choose Saturday or Sunday, 9 a.m. to 3 p.m.

Location: Rocky Mountain Arsenal National Wildlife Refuge in Commerce City

Presenter: David Buckner

Cost: \$25

David has been giving grass workshops for more than 15 years and is prepared to help anyone decipher a glume from a lemma or a spike from a panicle. His method for learning the grass family doesn't dwell too long on taxonomy. Rather he'll walk us through grass ecology and morphology, showing us how to break the family into readily accessible tribes. From there, identification of major genera will come very quickly. This workshop is a great introduction for those who want to learn the grass family and helpful to anyone who needs a bit more confidence in grass recognition.

David Buckner has a doctorate in plant ecology and has 41 years of professional experience in applied plant ecology, plant taxonomy, reclamation, soils and statistics. Presently he is senior plant ecologist for ESCO Associates Inc. His work has taken him from high mountains to plains during development of reclamation plans for government and private industry and the long-term study of plant community relationships. And grasses are very often central to these relationships.

NATIVE PLANTS AND INSECTS WORKSHOP

Saturday, April 27, 2013, 9am to 3pm

Location: Butterfly Pavilion, Westminster, CO

Presenter: Amy Yarger, Director of Horticulture

Cost: \$35 (Please note price change)

Plants and insects have complicated, often surprising, relationships. This workshop, co-sponsored by and located at the Butterfly Pavilion in Westminster, will cover identification of many Front Range insect species, the distinction between specialist and generalist insects and the impact that native plants and restored habitats can have on invertebrate diversity. We'll spend some time outside in the Butterfly Pavilion gardens and the adjacent Big Dry Creek open space, so please come prepared for unpredictable April weather.

Amy Yarger has worked in the public horticulture field since 1996. She received a bachelor's degree in ecology and evolutionary biology at the University of California, Irvine and then went on to study plant-animal interactions at the University of Michigan. Her work at the Butterfly Pavilion, where she has been a horticulturist since 2000, touches on many of her passions: plants, insects, habitat conservation and science education.

COLORADO MOSSES

May 18-19, 2013; Two-Day Workshop (FULL)

Sat. Workshop, 9 a.m. to 3 p.m. at a Boulder location

Sun. Field Trip, 9 a.m. to 3 p.m. at a trail TBD

Presenters: Ron Wittmann, Bill Weber and Paula Lehr

Cost: \$25

Let's take a break from the wildflowers and spend some quality time in the amazing world of bryophytes. On Saturday you'll learn how to shift gears from the more familiar methods of looking at flowering plants to those used for mosses. Dissection microscopes will be available for an up-close look. Then on Sunday we'll put our identification skills to use as we venture out to a local trail for a hands-on explore. Be sure to bring a lunch, water bottle, hand lens and all-weather gear!

Ron Wittmann and Bill Weber are the authors of Bryophytes of Colorado: Mosses, Liverworts, and Hornworts, as well as the Flora of Colorado and other works you may be familiar with.

BIRDS, BEES, FLOWERS AND FOOD: EXPLORING COLORADO'S POLLINATORS

One-Day Workshop and Field Trip: Choose Saturday, June 22 or Sunday, June 23, 2013, 9 a.m. to 3 p.m.,

Location: Boulder Open Space and Mountain Parks, Cherryvale Administrative Building, Boulder, CO

Presenter: Megan Bowes

Cost: \$25

A worldwide pollinator crisis has been prominent in news headlines, but it's not simply beekeepers and farmers who depend on the pollination services of the European honey bee and a whole suite of native pollinators. Pollinators enable the reproduction of native plants, which maintain the basis of most food webs—as well as the production of one out of every three bites we humans consume at the dinner table. This workshop will describe the process of pollination, how to identify the reproductive parts of a plant, as well as the roles birds, bees and many other insects play. We will also learn about the practical steps we can all take to improve native pollinator populations on our lands. The second half of this workshop will be in the field. Please dress appropriately and bring your *Colorado Flora Eastern Slope* and hand lens.

Megan Bowes is a Plant Ecology Technician with the City of Boulder Open Space and Mountain Parks Department and the Chair of the CoNPS' Horticulture and Restoration Committee. She's been a CSU Extension Native Plant Master Instructor for 5 years and has had a passion for

plant-insect interactions since first working in the garden industry two decades ago.

DRABA ON BOREAS PASS

One-day Workshop – Saturday, July 13, 2013, 9 a.m. to 3 p.m.

Location: South Park Ranger District Office, Fairplay, CO

Presenters: Sheila Lamb, Steve Olson

Cost: \$25

If you've never taken a close look at this tiny alpine genus, now is your chance. We'll look at specimens in the classroom before we hike up to find them in the wild. Sheila will share her local key and give us plenty of tricks to distinguishing the various hair types displayed by the taxa in this challenging genus. In the afternoon we'll hike to 11,000 feet on Boreas Pass and the hunt will begin! We will likely be treated to views of several rare species outside of the Draba clan, as well. Be sure to bring your hand lens, lunch and all-weather gear. Steve Olson has been with the Forest Service for 21 years, presently as the Forest Botanist at the Pike-San Isabel National Forests and Cimarron-Comanche National Grasslands. Sheila Lamb has worked for the USDA Forest Service at the South Park Ranger District for 20 years where she is the Natural Resource Specialist overseeing the range, botany, wildlife and noxious weed programs.

CoNPS RESEARCH GRANT AWARDEES, 2012

John W. Marr Fund: \$2,000 total awarded (focus on CO native plants)

- Mario Bretfield: \$1,000, Temporal Changes in Aspen Distribution in the Colorado Front Range, University of Northern Colorado (Scott Franklin, PhD student)
- Caroline Locke: \$500, Restoration ecology of transplants on Mount Yale, Regis University (Catherine Kleier, Undergrad Junior)

- Lori Brummer: \$500, Floristic survey of the Uncompahgre Basin and greater Grand Mesa area, University of Wyoming (Ron Hartman, MS student)

Myrna P. Steinkamp Fund: \$2,000 total awarded (focus on rare CO plants)

- Joseph Statwick: \$1,000, The origin and maintenance of species distribution in special-

ized endemic Colorado plants, University of Denver (Jennifer Neale, Anna Sher, PhD Student)

- Matt Rhodes: \$500, Pollen-mediated gene flow in fragmented and continuous populations of *Oenothera harringtonii*, a threatened Colorado endemic, Northwestern University and Chica-

go Botanic Gardens (Krissa Skogen, MS Student)

- Erin Meier: \$500, Conserving the diversity of high-elevation pine ecosystems, Colorado State University (Amy Angert, MS Student)

SOCIETY NEWS AND ANNOUNCEMENTS

PRESIDENT'S LETTER



The Colorado Native Plant Society has two important positions to fill in the coming months: the President and the Secretary.

I want to give you an idea about the opportunities as well as the duties of the President position. Then, following this letter, you will find information on the Secretary position.

For anyone interested in the President's position, let me just say that it is an extremely rewarding position to have. I have learned so much on what it takes to be a leader and if that is the training that you are looking for, I whole-heartily recommend this position. The people that you will get to work with are amazing, caring and supportive individuals, who like you, care about the native plants and ecosystems of Colorado. This is your chance to "make a difference".

What is required of the State President?

Below is what required of the President of the Society according to the Colorado Native Plant Society bylaws:

Section 2. Duties of the President. – The president shall preside at all meetings of the members and Board of Directors, shall have general supervision of the affairs of the Society, shall sign or countersign all certificates, contracts, and other instruments of the Society as authorized by the Board of Directors, shall make reports to the Board of Directors and members, and shall perform all such other duties as are incident to this office or are properly required by the Board of Directors. The president is responsible for being sure that the Society works actively to encourage the appreciation and conservation of the native plants and ecosystems of Colorado.

How much time does it take?

Weekly – Checking e-mails and responding to appropriate parties – 2-10 hrs. Quarterly – meetings with the Board and putting together agendas – 5-10 hrs.

If there other things that require my attention like: voting, signing documents, or anything else that I volunteer to do on behalf of the society, then more time is required.

What is the Process of Electing a New State President?

- 1) The Vice-President will solicit nominations from the CoNPS membership. Any member of the Society can nominate a President and any member of the Society

at least eighteen years of age may be elected to be President.

2) The Board of Directors will vote on the nominations and elect a President. It would be helpful if the nominees were present at the October 2013 Board meeting, so that the Board could meet them in person. A vote will be made at the October 2013 meeting and as long as there is a quorum for that vote a new President will be announced.

My term will end at the closing of the October 2013 Board Meeting. The newly elected President will then preside over the November 2013 Board Meeting. In the event that there are no nominations for President by the October 2013 meeting, then according to the CoNPS bylaws, the current Vice-President will take over as President.

Even if you are not interested in this position, but you know of someone that would be great at it, then nominate them. I never even considered that I would have enough experience to be the President, but someone else did and nominated me.

To nominate an individual for the State President position, please contact Bernadette Kuhn – CoNPS Vice-President bernadettekuhnconps@gmail.com before October 2013.

If you have any other questions, please let me know.

Thank you,

Crystal Strouse
President of the Colorado Native Plant Society.
csnativeplants@gmail.com

CoNPS SECRETARY

After 3 years as CoNPS Secretary, Nan Daniels is stepping down, and we are looking for her replacement.

The Secretary is appointed to a three-year term. The main functions of the position are:

- correspondence/communication and arrangements for the Board meetings, including facility reservations.
- assisting the President in determining dates for Board meetings and formulating agendas for them.
- taking minutes of Board meetings and posting the final draft for approval by voting Board members.
- keeping a current Board Contact List of Officers, Directors at Large, Chapter Presidents, Committee Chairs and significant Committee Members and distributing it periodically. (List is not published elsewhere nor furnished to other organizations.)
- answering general e-mail requests from members at large as well as public inquiries, often forwarding the e-mails to appropriate Board members to answer; and
- keeping official files both electronically and in hard-copy files, and maintains the Board notebook.

If you are interested in becoming the CoNPS Secretary, please contact the CoNPS President, Crystal Strouse, at csnativeplants@gmail.com

BOARD OF DIRECTORS BALLOT INCLUDED IN THIS ISSUE OF AQUILEGIA

Please vote and return your ballot by February 28!

COMMITTEE NEWS AND ANNOUNCEMENTS

EDUCATION AND OUTREACH. – Jim Tolstrup is the new Chairperson for the Education and Outreach Committee, replacing Megan Bowes as Chair. His con-

tact info is jim@surburbitat.org , and he's the Executive Director of the High Plains Environmental Center in Loveland, CO. Welcome, Jim!

CHAPTER NEWS and ANNOUNCEMENTS

Please note: The CoNPS website (www.conps.org) contains current information on planned activities. More detailed information is often available online.

BOULDER CHAPTER

Boulder Chapter programs are held on the second Thursday of each month (September through April) from 6:30 p.m. to 8:30 p.m. All meetings, except as noted, are held at the Community Room at the Boulder REI Store at 1789 28th Street (between Canyon and Pearl). For more information, please e-mail boulderconps@gmail.com.

Please see CoNPS policies for field trips. Following are some of the basic policies.

1. Refrain from plant collecting except for scientific study.
2. Share rides and pay the driver.
3. No pets on trips.
4. Trips are typically aimed at adult audiences unless otherwise specified.
5. Participants must sign a waiver and release of liability form.
6. Please be sure to notify the trip leader if you need to cancel, otherwise everyone will be waiting for you at the meeting place.

FROM TUNDRA POOLS TO BOULDER FIELDS: HABITATS AND PLANTS OF SUMMIT LAKE PARK, MOUNT EVANS

Thursday, February 14, 2013; 6:30 pm – 7:30 pm

Location: REI Boulder Community Room

Presenter: Mo Ewing, Colorado Native Plant Society

Summit Lake Park on Mount Evans, designated as a National Natural History Landmark, is one of the

“Crown Jewels” of Colorado. Elevation, soils, slope, moisture and aspect create beautiful collections of plants all struggling to survive the harsh conditions of the high alpine. Come for a photographic tour of this wonderful place with its fascinating ecosystems and learn how its beautiful plants choose the habitats to live in and what tricks they use to survive.

Mo Ewing is a retired conservation biologist who has studied everything from noxious weeds in the White Mountains of New Hampshire to rare and endangered plants on the shale barrens of northwestern Colorado. He currently volunteers at the Research Department at the Denver Botanic Gardens, serves as Conservation Chair and Treasurer of the Colorado Native Plant Society, and is a Rare Plant Monitoring Steward for the Colorado Natural Areas Program.

EFFECTS OF PRECIPITATION CHANGE ON A COLORADO GRASSLAND

Thursday, March 14, 2013; 6:30 pm – 7:30 pm

Location: REI Boulder Community Room

Presenter: Janet Prevéy, University of Colorado

Climate change will alter the amount and type of precipitation falling on Colorado. These changes in precipitation patterns will have profound effects on the species composition and ecosystem function of plant communities. My talk will address how these changes will impact native and non-native plant species in Colorado grasslands. I'll discuss “winners” and “losers” under different precipitation regimes and what precipitation change may mean for primary production, fire frequency, and forage quality of grasslands along the Front Range. This talk will be of interest to naturalists, land managers and owners, and anyone interested in the future of Colorado's foothills ecosystems.

Janet Prevéy is a PhD student at the University of Colorado, Boulder. She received a M.S. in plant ecology from Idaho State University. She has also worked for the U.S. Forest Service and National Park Service as a botanist.

GORE RANGE CHAPTER

A new chapter has been formed. The hope is that having a chapter closer to where people live, there may be more interest and greater participation in field trips, master classes and workshops.

Previously, some of us who live in the Gore Range area (mostly Eagle and Summit Counties) were members of the Plateau Chapter, with Gay Austin as President. Gay has done a fantastic job arranging great field trips as well as helping with last year's annual meeting in Carbondale. I am hoping that the Gore Range and Plateau chapters can collaborate on events in the future - especially since our summers here in the mountains are shorter!

I hope that the new chapter has volunteers willing to put together field trips and possibly a workshop or two. Many of you have local expertise and we all want you to share it with us. Please forward your interest to me so we can put a calendar of events together. You don't have to be a botanist - just take us to your favorite places!

Please consider joining the Colorado Native Plant Society if you have not already done so. This is a group of dedicated volunteers working to encourage the appreciation and conservation of the native plants and ecosystems of Colorado - one of the highest priorities for all of us. If you have friends who are interested in native plants, encourage them to join our group.

Thank you for doing all you can to make our local chapter and state society thrive. There is so much to learn - share what you know!

METRO-DENVER CHAPTER

Monthly meetings of the Metro-Denver Chapter are typically held on the fourth Tuesday of the month (September through April) at the Denver Botanic Gardens, 1007 York Street, Denver. The Metro-Denver Chapter wel-

comes everyone, members and non-members, to attend its free programs and field trips. For more information, please contact Jannette Wesley at metrodenverconps@gmail.com.

FLORA OF YOSEMITE NATIONAL PARK

FEBRUARY 26, 2013, 7 PM

Presenter: Carol English, Botanist, Colorado State Land Board

Location: 1556 Emerson St, Denver

Carol will share with you the native plants and diverse habitats experienced during her year working as a botanist in Yosemite National Park. The Park has an amazing array of native flora including an astounding diversity of *Mimulus* spp. (monkey flowers), *Ceanothus* spp. (Buckbrush), and *Arctostaphylos* spp. (Manzanita). The native azaleas are breathtaking along with a nice assortment of rare orchids, saprophytes and lilies. Carol will share with you photos of the magnificent Washington Lily which is endemic to Oregon and California. She will also compare and contrast some of the similarities and differences between Yosemite National Park and Colorado flora. And finally Carol will share with you a few landscape photos that display the tremendous habitat diversity providing vast adaptation opportunities for native flora to thrive within.

Carol's passion for native plants began in Yosemite National Park in the early 1990's while taking an ethnobotany class with Kat Anderson. She subsequently took Botany and Plant Taxonomy at San Jose State University while finishing a secondary science teaching degree. She then moved to Colorado and taught high school science and also worked as an interpretive specialist for several years at Lookout Mountain Nature Center. In 2004 she returned to graduate school studying botany with Leo Bruederle. She did research on the pollination biology of the rare endemic *Penstemon degeneri*. Since graduating in 2008 she completed an internship with the BLM, worked for the Colorado Natural Areas Program, and in 2011, worked on the Botany Team for Yosemite National Park. She now works as a botanist for the Colorado State Land Board.

STATE HIGHWAY 5 MT. EVANS FEN DETERMINATION AND WETLAND DELINEATION

March 26, 2013, 7pm

Presenter: Francesca Tordonato

Location: 1556 Emerson St., Denver

The Colorado Department of Transportation (CDOT) proposed improvements to State Highway (SH) 5 (Mount Evans Road), in Clear Creek County between mile markers 8.0 and 10 adjacent to Summit Lake Park. The repairs were proposed to address and correct unsafe conditions (hummocky, damaged and undulating roadway surface) resulting from frost heave. Summit Lake (located near mile marker 9.0) is located at the base of a high alpine granite cirque (glacially eroded basin) and was formally designated a National Natural Landmark in 1965 by the Secretary of Interior after being nominated by Dr. William A. Weber. The National Natural Landmark designation was based on many of the physical and ecological features that are unique to Summit Lake, which includes a variety of extremely rare arctic-alpine plants, which are found here and within the Arctic Circle. A wetland delineation and fen investigation was performed in the summer of 2011 to provide information to CDOT and the U.S. Army Corps of Engineers regarding wetlands within the study area that could be impacted by the proposed project. Additional field and laboratory investigation was performed to categorize wetland types (i.e., meadow, wet meadow or fen) within the study area. Francesca's talk will feature an overview of the fen determination and wetland delineation conducted for the project. In addition, the talk will feature an update on some of the rare plant mapping and additional studies that have occurred since the fen determination in 2011. The talk will also feature some useful information about wetland policy and wetland/fen ecology!

Francesca Tordonato is an environmental project manager and biologist for the Colorado Dept. of Transportation- Region 1. She is a Colorado native and long-time CONPS member.



NORTHERN CHAPTER

The Northern Chapter meetings are the first Thursday of the month (unless stated otherwise), November through May, 7:00 pm, at The Gardens on Spring Creek, 2145 Centre Ave., Fort Collins, CO. For further information, contact Northern Chapter President, Pam Smith.

Meetings and field trips are free and open to all. Prior to meetings, we meet for dinner with the speaker at Café Vino, 1200 S. College Avenue, Fort Collins at 5:30 p.m.

BAT BIOLOGY AND SURVEY IN COLORADO

Thursday, February 07, 2013, 7 p.m.

Presenter: Jeremy Siemers, Colorado Natural Heritage Program

With the recent emergence of White-Nose Syndrome in eastern North America, bats have received a fair amount of media attention recently. In this talk, Jeremy will discuss some of the things that make bats such interesting creatures as well as what makes them difficult to study. He will highlight some of the work he and others have conducted in Colorado in an effort to learn more about different species' biology, distribution, and population status.

FIRE AND FUELS IN RIPARIAN FORESTS

Thursday, March 07 2013, 7 p.m.

Presenter: Kate Dwire, Research Riparian Ecologist, US Forest Service, Rocky Mountain Research Station

Riparian vegetation is generally characterized by higher plant diversity, biomass, stem density, and rates of production than adjacent upland vegetation. These vegetation features contribute to the wide recognition of riparian areas as critical habitats that support both terrestrial and aquatic species. But in conifer-dominated riparian areas, how do streamside forest characteristics and fuel loads influence fire behavior and burn severity along stream-riparian corridors? How do streamside fuel loads compare with those of uplands in Mountain Pine beetle-infested watersheds? Kate will share results from a recent study characterizing riparian and upland forest stands in southern Wyoming and northern Colorado and discuss changing trends in riparian management.

TEN YEARS OF ECOSYSTEM CHANGES FOLLOWING THE HAYMAN FIRE

Thursday, April 04 2013, 7 p.m.

Presenter: Paula Fornwalt, Research Ecologist, US Forest Service, Rocky Mountain Research Station

It's hard to believe that ten years have passed since the Hayman Fire charred nearly 140,000 acres on the Pike National Forest. Paula will provide us with an update on her research examining how understory plant communities within the fire perimeter have changed over the last decade. She will also share her findings on long-term patterns of postfire overstory tree mortality, tree regeneration and surface fuel dynamics.

THE SPLENDOR OF SHAMBHALA MOUNTAIN CENTER

June 29, 2013, 9:00 am – 3:00 pm

Leader: Jim Tolstrup

Location: Meet at Albertson's parking lot on College in North Fort Collins to carpool at 9:00am to Shambhala Mountain Center, Red Feather Lakes.

For over 30 years Shambhala Mountain Center has presented yoga and meditation programs in a peaceful valley near Red Feather Lakes. Jim Tolstrup, former Land Stewardship Director of Shambhala Mountain Center will lead this moderately strenuous hike to see spectacular wildflowers and a campus landscaped with sustainability and native plant conservation in mind. Visitors will also get a tour of the Great Stupa of Dharmakaya, the largest example of Tibetan Sacred Art & Architecture in the Western Hemisphere.

Cost: \$7:00 per person (for a buffet lunch with a vegetarian option) at Shambhala Mountain Center. To register contact: Jim Tolstrup (970) 622-9676.

Go to the link below to read more, including a quote about SMC from Panayoti Kelaidis
<http://www.shambhalamountain.org/gardens/>

PLATEAU CHAPTER

The Plateau Chapter generally encompasses the west-central and north west area of Colorado from Grand Junction to Montrose to Gunnison to Glenwood Springs

to Craig. Wherever you are in Western Colorado, come join us for meetings and field trips. Chapter activities are scheduled throughout the year. For more information, visit www.CoNPS.org or contact Chapter President Steven Stern at stern.r.stephen@gmail.com.

SOUTHEAST CHAPTER

Activities of the Southeast Chapter are scheduled throughout the year and include field trips and meetings. Regular chapter meetings (always with an educational focus) will begin in October in both Pueblo and Colorado Springs. Those wishing more information can e-mail us as SEtrips@gmail.com.

The Southeast Chapter welcomes your participation, no matter where you are in southeast Colorado. Activities will be scheduled throughout the year with most meetings in Pueblo and field trips to a variety of sites throughout the area.

Southeast Chapter meetings are held from 6:30 p.m. to 8:00 p.m. All meetings, unless otherwise noted, will be held at the 701 Court Street in Pueblo. For more meeting information, please call Warren Nolan: (719) 543-6196.



Rhodiola rhodantha (detail)
Photo by Bernadi Liem

MEMBERSHIP APPLICATION AND RENEWAL FORM

Name(s)

Address

City State..... Zip

Phone ----- E-mail

MEMBERSHIP CLASS

Dues cover a 12-month period.

- Individual (\$20.00)
- Family / dual (\$30.00)
- Senior (65+) (\$12.00)
- Student (\$12.00)
- Organization (\$30.00)
- Supporting (\$50.00)
- Lifetime (\$300.00)

CHAPTER

You are free to affiliate with any chapter you choose and to attend the meetings of any chapter. Chapters do not have drawn map boundaries; the locations below indicate the usual meeting place of chapter meetings.

- Boulder
- Gore Range
- Metro-Denver
- Northern
- Plateau
- Southeast
- Southwest
- Unaffiliated

OPTIONAL E-MAIL DELIVERY OF *Aquilegia*

Many members prefer to receive the newsletter electronically via e-mail, and this saves the Society considerable printing and postage expense. If you would like to receive the newsletter by e-mail, please check this box and provide your e-mail address above.

- Please deliver *Aquilegia* electronically to the above e-mail address.

DONATION \$ _____ General Fund

Endowments in support of small grants-in-aid of research:

\$ _____ John Marr Fund: research on the biology and natural history of Colorado native plants.

\$ _____ Myrna P. Steinkamp Memorial Fund: research and other activities to benefit the rare plants of Colorado

Mail to: CoNPS Office, P.O. Box 200, Fort Collins, CO 80522.

Please make checks payable to "Colorado Native Plant Society". Dues and contributions are tax-deductible.

NEW MEMBERS

JUNE 1 – DECEMBER 31, 2012

Nancy Alexander & David Staat April Andujar Chris Ansari & Family Cindy Appel Lorrie Aslakson Penny Bieber
Diana Biggs Jean Blair & Brian Christianson Steve Butler Anne Clark Christine Cloninger Curt Cole
Colorado Mountain College Jeffrey Coyle Margaret Curtis Michelle Davis Pam Dickson Daniel Doak & Family
Roger Dowell Russell Duncan Alex Eschenbaum Kim Ewy Karl Ford Karen Forrester Phyllis Francis
Trish Gagnon Daniel Gee Laurie Gilligan Virginia Greer Sally Guthart Suzanne Hattery Julie Hauser
Jill Holdon Rebecca Kao Tara Kent Carolyn King Donna Krejci Cece MacVittie Kris Mattie Annyce Mayer
Karin McShea Jennifer Migliorato Bernie & Linda Nagy Ellen Nelson Patricia Niehoff Elaine Nowick
Anne Panetta Clarence & Beverly Postmus Harry Radcliff Cynthia Reiners John Rembetski Gail Reynolds
Rebecca Rountree Terri Sage Robert Schoenrock Kristin Schroder Jack Sosebee Christina Stark Helen Stella
Brian Sullivan Antoinette Tadolini Elizabeth Taylor Jeremiah Unger Carla Vandervoort Mark Visel
Steve Weaver Michele Weidner WestWater Engineering Shawna Zimmerman

Colorado Native Plant Society



The Colorado Native Plant Society is dedicated to furthering the knowledge, appreciation and conservation of native plants and habitats of Colorado through education, stewardship and advocacy.

Membership is open to all with an interest in our native plants and is composed of plant enthusiasts, both professional and non-professional.

Please join us in learning about, enjoying and protecting Colorado's native plants.

OFFICERS

President	Crystal Strouse	csnativeplants@gmail.com
Vice President	Bernadette Kuhn	bernadettekuhnconps@gmail.com
Treasurer	Mo Ewing	moewing@q.com
Secretary	Vacant	
Admin. Asst.	Linda Smith	conpsoffice@aol.com

CHAPTER PRESIDENTS

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Metro-Denver	Jannette Wesley	metrodenverconps@gmail.com
Plateau	Stephen Stern	stern.r.stephen@gmail.com
Southeast	Ann Zielinski	zielinski.agnesann7@gmail.com

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"	Jan Turner ('12)	jltturner@regis.edu
"	Charlie Turner ('11)	turner@rabbitbrushpublishing.com
"	Steve Yarbrough ('11)	steveandkenna@msn.com

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AQUILEGIA

Newsletter of the Colorado Native Plant Society

Aquilegia is the newsletter of the Colorado Native Plant Society, and is available to members of the Society and to others with an interest in native plants. Four regular issues are published each year, plus a special issue for the annual Society meeting held in September

Announcements, news, articles, book reviews, poems, botanical illustrations, and other contributions should be sent to the editor at bh.prairieink@gmail.com.

All contributions are subject to editing for brevity and consistency, with final approval of material changes by the author.

Articles from *Aquilegia* may be used by other native plant societies or non-profit groups, if fully cited to author and attributed to *Aquilegia*.

Deadlines

Submissions to *Aquilegia* are accepted throughout the year, although the usual deadlines for publication are:

February 15 (Spring issue, published March 1)
April 15 (Summer issue, published May 15)
June 15 (Annual Meeting issue, published July 15)
July 15 (Fall issue, published Aug. 15)
October 15 (Winter issue, published November 15)



P.O. Box 200
Fort Collins, Colorado 80522
<http://www.conps.org>



- CALENDAR -

NEXT BOARD MEETING

Saturday, March 3
Tracy Center, Regis University, Denver

**Workshops
Inside!**

February 15	Deadline for submission of research proposals
February 28	Deadline for mailing ballots for new Board Directors
October 5	Board of Directors Meeting, Regis University, Denver
November 2	Board of Directors Meeting, Regis University, Denver

CoNPS BOARD OF DIRECTORS NOMINEES and BALLOT FOR THE 2013-2015 TERM



Instructions: Vote for four candidates (listed below in alphabetical order), refold, seal, add postage, and return your ballot by February 28 to the Colorado Native Plant Society, P.O. Box 200 Fort Collins, CO 80522.

_____ **LEO BRUEDERLE.** Leo received a PhD in botany from Rutgers University and is currently a faculty member in the Department of Integrative Biology at the University Colorado Denver, where he teaches *Flora of Colorado*. Trained as a plant systematist, Leo has worked extensively on sedges comprising the genus *Carex*, with forays into the systematics and evolution of the cranberries, blueberries, and pines. Current research funded by the US Fish & Wildlife Service is clarifying the taxonomy and systematics of Penland's alpine fen mustard, *Eutrema penlandii*. Leo also has interests in STEM education emphasizing undergraduate research and routinely publishes with his students, most recently on *Carex viridistellata*, a North American endemic species new to science. He has been active in the Colorado Native Plant Society for nearly 20 years, having previously served as Metro Denver Chapter officer, Board Member, Editor of *Aquilegia*, and President of the Society.

_____ **BETSY BULTEMA** Betsy received her BS in Plant Biology from UC Davis and is now attending CSU Ft Collins where she is pursuing a Master's degree in Ecology. Her research is focused on creating a vegetation classification for fens in the San Juan Mountains and investigating environmental constraints on Sphagnum distribution within the San Juans. Before attending CSU, she spent six years as a field botanist for a variety of organizations including the California Native Plant Society, the Forest Service, and The Nature Conservancy. She hopes to put her passion for plants to use by serving on the CoNPS board.

_____ **ANDREA CUMMINS** Andrea is currently the CSU Extension Horticulture Agent in Douglas

County. In this role she leads the Native Plant Master program (NPM) and serves on the state NPM team. Past experiences include serving as a Botanist/Wetland Scientist for the U. S. Corps of Engineers, Seattle District, managing a native plant nursery outside of Ft Collins, and volunteering for the Colorado Natural Heritage Program, Washington Rare Care Plant Conservation Program, and the Washington Park Arboretum. She has a M.S. in Plant Science/Horticulture from Colorado State and a Certificate in Wetland Science from the University of Washington. She is dedicated to the conservation of our native ecosystems and believes public education has an important role in this endeavor.

_____ **STEVE OLSON** Steve received a BA in zoology from Southern Illinois University. While at SIU he served as Secretary and Conservation Chair for the Illinois Native Plant Society. During that time he also worked for Natural Land Institute at the southern Illinois field office. That was followed by three years with the Indiana Department of Natural Resources working on rare plant surveys for the Hoosier National Forest. After that came 11 years as a Natural Resources Specialist on the Hoosier. He has now been the Forest Botanist on the Pike-San Isabel National Forests and Cimarron-Comanche National Grasslands for 10 years. He has led several field trips for CoNPS to various parts of the PSICC. His other interests include birding, herptiles, mammals, geology, and local history.

_____ **LYNNELL RUBRIGHT** Lynn is a geographer with a Ph.D. from the University of Wisconsin (1977). She has taught at California State University, Fullerton, The University of Denver and the

University of Kansas. She also has a M.S. Degree (1991) from the Department of Range Science at Colorado State University. Her primary interest is in the Poaceae. She is a volunteer Master Naturalist for the City of Fort Collins where she has been producing handouts and bulletin board materials on the plants blooming or of interest at Soapstone Prairie Natural Area and the Cathy Fromme Prairie. She also co-teaches a course in the Native Plant Master program for CSU Larimer County Extension. She participates enthusiastically in the

plant walks and activities of the Northern Chapter and loves the CoNPS workshops.

WRITE-IN CANDIDATE (Please provide contact information)

Name of candidate _____

Phone number _____

E-mail address _____

Colorado Native Plant Society
P.O. Box 200
Fort Collins, CO 80522

**COLORADO NATIVE PLANT SOCIETY
WORKSHOP REGISTRATION FORM
2012-2013**



NAME: _____
STREET: _____
CITY: _____ STATE: _____ ZIP: _____

PHONE (h): _____ PHONE (w): _____
PHONE (cell): _____ E-MAIL: _____

I am a CoNPS member Yes No. (If not, please add annual membership fee to payment.)

Please register me for the following workshops (cost per workshop may vary – see newsletter or website for exact cost):

Workshop Title Session Date Fee \$ _____

Total registration fees \$ _____

Membership fee (if applicable) – see below \$ _____

Total amount of check made payable to CoNPS \$ _____

To encourage carpooling, are you willing to share your contact information with others in the same workshop? Yes No

AFFILIATE CHAPTER. -- Please select an affiliate Chapter (all members may attend any chapter event):

Boulder Gore Range Metro/Denver
Northern Plateau SE SW Unaffiliated

MEMBERSHIP FEES – (circle one):

Individual \$20 Family \$30 Senior \$12 Student \$12
Organization \$30 Supporting \$50 Lifetime \$300

Mail Workshop Registration to: CoNPS, Linda Smith, 4057 Cottonwood Dr., Loveland CO 80538